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by

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WATER SUPPLY FORECAST FOR UTAH, 1938

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During the period from March 26 to April 1, snow surveys were completed at all of the Utah Cooperative snow courses. The water content in snow storage at this time may be taken as indicative of the April-September and July-September runoff with, of course, later modification of estimates in accordance with subsequent storms and temperature conditions.

This report presents:

1. Forecasts of July-September and April-September runoff for the streams on whose drainage areas snow surveys have been conducted for a sufficient number of years to make it possible to forecast stream-flow quantitatively.
2. A brief statement of conditions on other watersheds of the state, based on available reports.
3. A water forecast summary by drainage basins.
4. A comparison of runoff from principal Utah streams.
5. Storage in reservoirs as of April 1.
6. Results of annual snow surveys grouped according to stream basins.

Bear River Above Bear Lake

The snow cover measurements at the head of Bear River, Lost Lake, and Goodman Ranch are all representative of the water conditions on the Bear River. There are no low level courses on this area, but the valley precipitation at Randolph and Woodruff for the October-March period has been between 125 and 140 per cent of normal. The snow cover at the Goodman Ranch this year contains only about 50 per cent more water than it did a year ago, but at the head of Bear River, snow course the cover contains only 95 per cent of that a year ago; and at Lost Lake on the headwaters of the Provo River, it is 90 per cent of that last year.

The soil under the snow is saturated and the losses due to priming the soil should be small. The low snow is less than half that in 1936 so that little high spring flow can be expected. With normal spring precipitation and temperature the Bear River should discharge about 200,000 acre-feet at the Stewart Dam during April-September period and 250,000 acre-feet for the period January-December, 1938. The portion of this that is available for diversion into Bear Lake will depend largely upon the rate at which the snow melts.

Bear Lake Drainage

The snow cover on the drainage area directly tributary to Bear Lake is 110 per cent of 1937 at the Garden City Summit and 163 per cent at Monte Cristo Ranger Station. The soil under the snow is open and very wet. Little priming should be necessary. None of the streams have started to rise. With normal precipitation and temperature conditions the yield to Bear Lake from its local drainage should be between 81,000 and 85,000 acre-feet.

Probable Rise of Bear Lake

The probable yield of Bear Lake and the drainage tributary to Bear Lake will exceed the demand by 120,000 to 130,000 acre-feet and cause a net use in the lake level of approximately 2.0 feet.

Logan River Drainage

The distribution of precipitation on the Logan River drainage during 1937-38 has been unusual. The valley precipitation has been much heavier relatively than the mountain precipitation. The October-March precipitation at Logan was about 36 per cent above normal, while the accumulated snow cover on the high watersheds on April 1 was only 76 per cent of the long time mean. The ground under the snow cover is open and very wet. The low snow cover is not sufficient to cause high spring runoff unless abnormally high spring precipitation and temperatures occur.

The estimated flow of the Logan River for the period April-September, inclusive, will probably not be less than 126,000 nor greater than 130,000 acre-feet. The July-September runoff will probably not exceed 41,000 and may be as low as 37,000 acre-feet.

The maximum spring discharge in 1937 approached 900 c.f.s. with a maximum mean daily flow of 808 c.f.s. The October 1, 1937, discharge was 143 c.f.s. With normal spring temperature the maximum spring discharge in 1938 should not exceed 1000 c.f.s. with a maximum mean daily of 900 c.f.s. The minimum late season flow on the Logan River should not be less than 140 c.f.s. during 1938.

Cub River Drainage

The snow cover at Franklin Basin is representative of the snow cover on the Cub River watershed. The snow cover at Franklin Basin this year is 119 per cent of that in 1937 and 67 per cent of the long time normal. The soil under the snow is open, but wet.

Heavy March rains have primed the soil on the low areas and caused some premature melting. The streams, however, have not started to rise. With normal temperature and precipitation conditions during April and May, the runoff from Cub River will be greater than in 1937, but will probably not exceed 115 per cent of that in 1937. There will be little spring high water, but the late season flow should be considerably better than in 1937.

Maple, High, Summit, and Providence Creeks

These drainage areas are all on the west side of the Bear River range and are relatively short and steep. The low snow cover is slightly below normal, but the soil is saturated by heavy March rains. The high cover is

slightly less than that in 1937. The ground under the snow is open, but very wet. In the absence of excessively high temperatures the spring runoff should not greatly exceed that in 1937, but, due to fall and spring rains, the late season flow can be expected to be greater than that in 1937.

Blacksmith Fork Drainage Area

The snow cover on the Blacksmith Fork Drainage this year is heavier, relatively, than on any other watershed in the state. The snow cover at Monte Cristo, Blake Ranger Station, and at the head of Dry Curtis Fork averages 168 per cent of that in 1937. The snow cover approaches that in 1936 when the Blacksmith Fork yielded an April-September flow of 90,000 acre-feet. With normal precipitation and temperature the April-September runoff will probably reach 80,000 acre-feet, and the July-September may be as much as 20,000 acre-feet. No unusually high water is expected during the spring runoff.

Little Bear River Drainage

The Little Bear River watershed has an average elevation lower than the Blacksmith Fork. The Monte Cristo and Blake Ranger Station courses are indicative of the conditions on this watershed. The snow cover at these two stations average 170 per cent of last year, and it is estimated that the runoff will be approximately 160 per cent of that in 1937.

Ogden River Drainage

Measurements at the Gertsen Creek, Wheeler Basin, and Monte Cristo snow courses show an average snow storage only 88 per cent of that in 1937. The Ogden valley snow cover contains considerably less water than a year ago, but at the higher elevations the water content is from 60 to 70 per cent greater than in 1937. If normal temperature conditions prevail during the melting period there will be little high water. The total April-September runoff will probably reach 75,000 acre-feet, with July-September runoff approaching 9000 acre-feet.

Weber River Drainage

The major portion of the water in the Weber River comes from four main branches: Chalk Creek, Lost Creek, East Canyon, and the main Weber above Oakley. Snow courses are located on each of these tributaries, except Lost Creek. The high courses on the main fork of the Weber show a water content 92 per cent of 1937 and 79 per cent of a long time normal. In the absence of unusually high temperatures little spring high water can be expected.

The amount, position, and condition of the snow cover on the Weber River watershed, this year, indicate a probable maximum April-September runoff at Oakley of 105,000 acre-feet. Deficient spring rains may reduce this to as low as 100,000 acre-feet. The July-September runoff should equal approximately 20,000 acre-feet, maximum, and may possibly be as low as 18,000 acre-feet.

The Echo Reservoir contained 49,000 acre-feet on April 1, 1937, and this year it contains 55,500 acre-feet on the same date. The East Canyon reservoir contained 10,640 acre-feet on April 1, 1938. It is estimated that both reservoirs will fill to capacity this year.

Salt Lake Watershed

These watersheds include City, Emigration, Parley's, Big Cottonwood, and Little Cottonwood Creeks. The only snow courses on these areas are those located at Lamb's Canyon (elevation 6000 feet), Parley's Canyon Summit (elevation, 7800 ft.), Silver Lake (elevation 8000 ft.) and Mill D South Fork (elevation 7400).

The water content of the snow at Mill D South Fork, Silver Lake, Lamb's Canyon, and Parley's Canyon Summit is 94.4, 108, 85, and 90 per cent, respectively, of that in 1937.

The low snow cover is light, but the heavy March rains have caused some premature melting and the soil under the snow is saturated. With normal spring temperatures and precipitation, there should be no unusually high water on the Salt Lake streams this spring.

The April-September discharge of Big Cottonwood Creek in 1937 was 32,600 acre-feet. The discharge for the same period in 1938 will be equal to or slightly less than in 1937.

All reservoirs on the watershed can be expected to fill.

Provo River and Utah Lake Drainage

The snow cover on the headwaters of the Provo River, as indicated by the April 1 surveys, has a water content approximately 83.5 per cent of 1937 and 75 per cent of an average long time normal. There has been little melting except at the low elevations. The ground is saturated under the snow, but the streams have not started to rise. With normal spring precipitation and temperature there should be no excessively high spring flood this year on the Provo River.

The probable runoff of the Provo, as measured at the forks, will not be less than 145,000 acre-feet for the April-September period and 40,000 acre-feet for the July-September period. Abnormally heavy spring precipitation may raise the foregoing to as high as 150,000 and 43,000 acre-feet respectively.

A cold, backward spring will materially reduce the discharge into Utah Lake, but with the present available storage in Utah Lake, it is believed an ample water supply will be available this year for all users under the Utah Lake and Jordan River system. Conservation in use should be practiced, however, so that a reserve may be built up in Utah Lake to offset future dry years.

American Fork River Drainage

The snow storage on the American Fork River watershed is represented by snow measurements at the Dutchman Ranger Station, South Fork Ranger Station, Altamont, and Timpanogos Divide snow courses. The snow cover at the Dutchman Ranger Station is about 70 per cent of that in 1937, and 68.4 per cent of normal. At the South Fork Ranger Station the snow was patchy and could not be measured. At Altamont and Timpanogos Divide, the snow cover is only 82 per cent of that in 1937. The low cover is not nearly so heavy as in 1937 due to warm rains and premature melting. Excessive high water is not expected, and the late season flow will probably be about 25 to 30 per cent less than in 1937.

Hobble, Payson, Santaquin Creeks and Spanish Fork River

The snow cover on this watershed contains considerably less water than it did in 1937, it being only 66.4 per cent of that year. The low snow cover is light, but the ground is saturated. The April-September runoff will probably not exceed 67 per cent of that in 1937, and the spring flood runoff can be expected to be considerably lower.

Strawberry Reservoir

The snow cover on the drainage above the Strawberry Reservoir is only 73.4 per cent of that in 1937. The hold over storage on April 1, however, was nearly twice that in 1937. The 1938 inflow to the reservoir will probably not exceed 75 per cent of that in 1937, but this inflow, together with the hold over storage, should provide a full water supply for all lands under this system during 1938.

San Pitch Drainage

The snow cover on the west side of the Wasatch Plateau which drains into the San Pitch river contains approximately 96.5 per cent as much water as in 1937. There has been considerable winter melting, particularly at the lower elevations. The water, however, has been absorbed by the ground and the streams had not started to rise on April 1. The relatively light low snow cover should not cause excessively high spring runoff. The April-September flow from the streams tributary to the San Pitch river can be expected to be equal to or slightly less than in 1937.

Salina Creek Drainage

The snow storage on the Salina Creek watershed is only 83 per cent of that in 1937 and is about equal to that in 1932. The April-September runoff for 1938 will probably not exceed 80 per cent of that in 1937. With normal spring temperatures no exceptionally high spring flows are to be expected.

Clear Creek Drainage

The snow storage on this watershed is only 85 per cent of that in 1937. The April-September runoff in 1937 will be approximately 15 per cent less than in 1937, and with a light low snow cover no unusually high spring flows are expected.

Main Sevier River Watershed

The water in snow storage on the Sevier River above Salina averages 76.1 per cent of that in 1937. The April-September runoff will probably reach 95 per cent of that in 1937. Little high spring flow can be expected as the low snow is deficient. The primary rights on the Sevier River have unusually good prospects for a water supply even though it will be less than in 1937. The holdover storage in the reservoirs is large. The smaller reservoirs will fill and the larger ones will approach spillway capacity.

Fillmore Drainage

The snow cover on the Fillmore watersheds is approximately 97 per cent of that in 1937. The water supply will be slightly less than in 1937, and high spring floods can be expected if the weather turns unusually warm.

Coal Creek Drainage

The high snow cover on the Coal Creek watershed this year contains only 80.2 per cent of that in 1937. The snow line has receded, but there is still a heavy cover in the canyons and considerable high water can be expected if the weather turns unusually warm. The April-September runoff will probably not exceed 80 per cent of that in 1937.

Beaver River Drainage

The snow cover on the Beaver River watershed this year is approximately 88.5 per cent of that in 1937. The April-September runoff may reach 43,000 acre-feet and the July-September runoff may be as much as 9,000 acre-feet. The hold over storage in the Rocky Ford Reservoir exceeds that in 1937 and an ample water supply is assured for the water users under this project.

Virgin River

The snow cover on the head waters of the Virgin River is only 73.3 per cent of that in 1937. The April-September runoff was 148,300 acre-feet and the July-September runoff was 26,000 acre-feet. The runoff from the stream is seriously affected by summer rains, but outside of such storms the Virgin River can be expected to discharge, during April-September of this year, not less than 109,000 acre-feet, and during the July-September period not less than 19,000 acre-feet.

Salt Creek near Nophi

There are no snow courses on this watershed, but the Mammoth Ranger Station course, about fifteen miles East, furnishes a fair index of the conditions on the Salt Creek drainage. The snow cover at this course indicates a water supply approximately 84 per cent of that in 1937. The April-September runoff, therefore, should be 15,000 and the July-September, 3600 acre-feet.

Price River Drainage

The water content of the snow cover on the Price River watershed at the lower elevations is approximately 80.7 per cent. The ground under the snow cover is open and very wet, so that absorption losses will be less than in 1937. The density is less than that a year ago, so that with similar temperature conditions the runoff may be delayed slightly.

The Scofield Reservoir will fill to its allowed capacity of approximately 30,000 acre-feet.

The April-September runoff at Helper during April-September, 1937, was 105,400 acre-feet, approximately 15,000 acre-feet of which was drawn from storage. With the present snow cover, the Price River discharge at Helper, should equal approximately 87,000 acre-feet.

Huntington, Cottonwood, and Ferron Creeks

The snow courses representing these watersheds are all high and cover the area from the head of the Price River on the north, to the head of Ferron Creek on the south. The snow cover this year is almost identical with that in 1937, and the runoff should approximate that in 1937. The runoff from Huntington Creek for the April-September period will probably not exceed 55,000 and may be as low as 53,000 acre-feet. For the July-September period it should reach 14,000 acre-feet. Cottonwood Creek should yield 60,000 and 10,000 acre-feet respectively for the April-September and July-September periods.

UINTAH BASIN DRAINAGE

Ashley Creek

The snow cover on the east side of the Uintah Mountains is 90 per cent of that in 1937, and 88 per cent of the long time normal. The runoff from Ashley Creek for April-September period should be approximately 53,000 acre-feet, and for the July-September period it should reach 14,000 acre-feet.

Uintah River and Whiterocks Creek

The water in snow storage on these watersheds is only 72.8 per cent of that in 1937. The runoff from Whiterocks Creek for April-September will probably reach 60,000 acre-feet, and for July-September 18,000 acre-feet. The Uintah River at Neola should yield 85,000 acre-feet for April-September and 38,000 acre-feet for the July-September period.

Lake Fork

The snow cover on the high areas at the head of Lake Fork is only 67.5 per cent of that in 1937. It is estimated that the runoff of Lake Fork at Moon Lake will not exceed 67 per cent of that in 1937.

Duchesne River Drainage

This stream heads in the west end of the Uintah Mountains. There are no snow courses directly on this area, but the Los Lake snow course on the Provo River is fairly representative of the conditions on the head of the Duchesne. The snow cover at Lost Lake this year is 90 per cent of that in 1937. The runoff from the Duchesne at Tabiona for April-September will probably reach 100,000 acre-feet, and that for July-September 23,700 acre-feet.

La Sal Mountain Area

The snow cover on the La Sal National Forest this year is only 70 per cent of that in 1937. The water supplies for irrigation purposes in this region will be less than in 1937, but it is believed, with careful use, no reservoir shortage will result.

Blue Mountain Area

The snow cover on this area is much less than on the La Sal area; it being only 59 per cent of 1937. In spite of this decrease over 1937, with careful use an ample water supply for this area is assured.

SUMMARY

The Utah Cooperative Snow Surveys, which were completed over a network of approximately eighty-five courses on April 1, show a wide variation in water supply conditions throughout the state. In general the water supply prospects are excellent for the entire state. The users of natural flow will have a fair supply and the users of storage water have prospects approximately 50 per cent better than in 1937.

Bear River Drainage

(a) The flow available for storage in Bear Lake will approach 93.4 per cent of that in 1937 from Bear River and 91 per cent from direct tributaries to the Lake. The total inflow to the Lake should approach 333,000 acre-feet. The net rise of the level of Bear Lake this year should be about 2.0 feet.

(b) The Cache Valley Streams will yield, during April-September, from 110 per cent of 1937 on the small streams draining the west face of the range to 107 per cent on the Logan, 136 per cent on the Blacksmith Fork and 160 per cent on the Little Bear. The snow cover this year is relatively much heavier on the headwaters of the Blacksmith Fork, Woodruff Creek, Little Bear and Ogden Rivers than any other place in the state. The July-September runoff will be a somewhat smaller percentage because the heaviest belt of snow lies between 8,000 and 9,000 feet. The April-September and July-September runoff from the Logan will be 128,000 and 39,000 acre feet respectively and similarly that for the Blacksmith Fork will be 80,000 and 20,000 acre-feet respectively.

Weber River Drainage

(a) The low snow cover on the Ogden River watershed is only 88 per cent of 1937, but the high cover is from 60 to 70 per cent greater than in 1937. The runoff from the Ogden should, therefore, be greater than in 1937 and will probably reach 75,000 acre-feet for April-September and 9,000 acre-feet for July-September.

(b) The Weber River watershed has a high snow cover 92 per cent of that in 1937, and the river at Oakley should yield 105,000 acre-feet during the April-September period and 20,000 acre-feet during the July-September period. No unusually high spring flow is expected.

Salt Lake Watersheds

The snow cover is slightly less than in 1937 and a runoff 2 to 3 per cent below that in 1937 can be expected.

Provo River and Utah Lake

(a) The snow cover on the Provo River watershed is 83.5 per cent of that in 1937. The runoff of the Provo River at the Forks will probably not be less than 145,000 during the April-September period. Little spring high water is expected.

(b) The snow cover on the American Fork watershed is lighter than on the Provo and the runoff from this area will be 25 to 30 per cent less than in 1937.

(c) The other small creeks draining directly into Utah Lake will discharge from 65 to 75 per cent of the 1937 flow. No unusually high water is expected from any of these streams.

Sevier River

(a) Streams tributary to the San Pitch river will probably discharge 95 per cent of that in 1937.

(b) The runoff from Salina Creek will probably not exceed 80 per cent of that in 1937.

(c) Clear Creek will probably yield 85 per cent of the 1937 flow, but the Main Fork of the Sevier above Salina will probably not yield more than 76 per cent of that in 1937.

Colorado River

(a) The Virgin River flow is affected greatly by summer precipitation but barring unusual summer storms this stream should yield, at Virgin, approximately 148,000 acre-feet during April-September and 26,000 acre-feet during July and August.

(b) The runoff from Huntington, Cottonwood, and Ferron Creeks should equal that in 1937.

(c) The Price River will yield approximately 80 per cent of that in 1937.

(d) The snow cover varies widely along the Uintah Mountain range. The snow cover on the Ashley Creek and Duchesne watersheds is about 90 per cent of that in 1937, but it drops to 72 per cent on the Uintah and Whiterocks Rivers, and to 67 per cent on the Lake Fork River.

Independent Streams

(a) Salt Creek will yield approximately 84 per cent of that in 1937 or 15,000 acre-feet during April-September.

(b) The streams draining the west side of the Pavline Range near Fillmore will yield approximately 97 per cent of that in 1937.

(c) Coal Creek at Cedar City will yield 80 per cent of 1937 or 26,000 acre-feet during April-September.

(d) The Beaver River at Beaver will yield approximately 88 per cent of that in 1937, or approximately 41,000 acre-feet during the April-September period.

It is seen from the foregoing summary that the snow cover is spotted, but that in no case is there an impending water shortage. The soil under the snow is almost universally saturated so that pruning losses will be small. The March rains have saturated the valley soils and moisture conditions for planting are unusually good.

There is little low snow so that in the absence of abnormally high temperatures no unusually high spring flood flows can be expected.

The available storage in reservoirs on April 1 is the best for years.

In case abnormally high spring precipitation and temperatures should occur, which would bring the snow cover off quickly, the following warnings are justified:-

1. All owners of reservoirs should examine their spillways and outlet works and should clean and repair their trash racks and see that gate operating devices are in working order.

2. Stream channels should be cleaned of debris and headgates put in order to protect the canals.

3. Canals should be cleaned early so that they may be loaded to capacity to relieve peak flood flow through the lower areas.

There will be no water shortage in any part of the State during the forepart of the summer, but the late season flow is always less than the demand, therefore plans should be made that will conserve the water supplies during the late summer.

The following tables show a brief summary of the water supply forecasts, reservoir storage and the snow cover data for 1937:

Table I

-- FORECAST SUMMARY --

NAME OF STREAM OR BASIN	Run-off in 1000's of Acre-Feet										Expected Runoff for 1938 in per- cent of 1937	
	1938		1937		1936		1935					
	I	II	I	II	I	II	I	II	I	II	I	II
BEAR RIVER Bear River at Stewart Dam* Bear Lake Drainage*	250.0		267.8		358.1		81.9		93.4			
	83.0		91.1		121.6		57.4		91.0			
CACHE VALLEY STREAMS Miscellaneous Small Streams Logan River Blacksmith Fork River Little Bear River	128.0	39.0	159.4	39.7	200.0	51.1	114.4	36.2	107.0	98.3		
	80.0	20.0	58.6	17.6	90.0	20.1	35.6	11.3	136.5	113.6		
									160.0	150.0		
									110.0	110.0		
WEBER RIVER South Fork of Ogden River Weber River at Oakley	75.0	9.0	62.9	8.1	109.5	8.7	46.6	6.1	119.0	111.0		
	105.0	20.0	107.8	17.6	160.5	27.9	127.0	20.3	97.4	113.6		
SALT LAKE CITY WATERSHEDS Big Cottonwood Creek	32.0	6.0	32.6	6.2	40.6	7.2	33.7	6.8	98.0	97.0		
PROVO RIVER AND UTAH LAKE American Fork River Provo River Hobble Creek Spanish Fork River	145.0	40.0	178.2	47.7	184.0	43.9	114.1	32.7	80.0	75.0		
									81.5	84.0		
									67.0	65.0		
									75.0	70.0		
SEVIER RIVER San Piten Tributaries Salina Creek Clear Creek East Fork of Sevier Sevier River at Kingston	60.0	14.0	87.6	14.2	23.5	11.8	27.5	3.7	95.0	90.0		
									80.0	75.0		
									85.0	80.0		
									76.0	76.0		
									68.5	98.5		
INDEPENDENT STREAMS Fillmore Watersheds Beaver River Coal Creek near Cedar City	41.0	8.0	47.7	8.8	41.2	11.6	30.3	6.9	95.0	93.0		
			32.8	3.96	16.1	5.4		4.4	86.0	91.0		
UTAH BASIN STREAMS Duchesne River at Tabiona Lake Fork at Poonlake Whiterocks Creek at Whiterocks Ashley Creek at Vernal	100.0	23.7	122.7	26.4	140.0	33.0	73.7	15.9	81.5	89.8		
	60.0	18.0	82.3	24.8	52.7	26.0	55.7	14.0	73.0	72.6		
	53.0	14.0	67.7	18.3	33.3	13.1	53.5	12.9	78.3	76.5		

*Total for year October to September
I - April to September, inclusive

Table 1 cont'd.

-- FORECAST SUMMARY --									
NAME OF STREAM OR BASIN	Run-off in 1000's of Acre Feet						Expected Run-off for 1937 in Percent of 1936		
	1938		1937		1936		1935		
	I	II	I	II	I	II	I	II	I
NORTH SIDE UTAH MOUNTAINS									
PRICE RIVER									
Price River	90.0	105.4	27.6	80.0	20.9	44.9	20.9	85.7	
Huntington Creek	55.0	62.2	15.5	74.8	14.9	53.3	13.2	88.7	90.4
Cottonwood Creek	60.0	62.1	12.2	79.3	13.0	69.6	9.9	96.6	82.0
VIRGIN RIVER									
Virgin River	109.0	148.4	26.0	63.3	27.9	89.0	17.6	73.4	73.1
LA. SAL MOUNTAINS									
Mill Creek								70	70
MONTICELLO AREA									
Montezuma Creek								60	59
SALT CREEK at Nephi	15.0	3.6	21.0	4.4	23.7	5.5	14.2	3.8	81.8

COMPARISON OF RUNOFF FROM PRINCIPAL UTAH STREAMS
IN 1000's of Acre-Feet

Table II

NAME OF STREAM	April-September Runoff					July-September Runoff												
	Average	1935	1936	1937	1938	Average	1935	1936	1937	1938								
	Apr.-Sept. in A.F.	A.F. Mean	A.F. Mean	% of A.F. Mean	% of A.F. Mean	Jul.-Sept. in A.F.	A.F. Mean	A.F. Mean	% of A.F. Mean	% of A.F. Mean								
Logan River at Logan	164.7	114.4	69.5	200.0	121.6	119.4	72.0	118.0	77.8	54.0	36.2	59.5	51.1	94.6	39.7	73.5	39.0	72.2
Blacksmith Fork at Hyrum	72.5	35.6	49.2	900	124.2	586	80.7	80.0	10.4	24.2	11.3	46.7	20.1	83.1	17.6	72.7	20.0	82.7
Weber River at Oakley	148.7	127.0	85.5	160.5	108.0	107.8	72.6	105.0	70.6	30.5	20.3	66.6	27.9	91.4	17.6	57.7	20.0	65.6
Ogden River, S. Fork near Huntsville	64.7	46.6	72.0	109.5	169.3	629	97.4	75.0	116.0	8.6	6.1	70.9	8.7	101.2	8.1	94.2	9.0	104.5
Provo River	185.9	114.0	61.3	184.0	92.0	178.2	95.8	145.0	78.0	50.1	32.7	65.3	43.8	87.6	47.6	95.0	40.0	79.8
Price River at Provo	85.2	44.9	52.7	800	93.9	105.4	133.5	90.0	105.7	16.7	20.9	125.2	20.9	125.2	27.6	165.3	--	--
near Helper	64.0	53.5	83.6	33.4	52.2	67.7	105.7	53.0	83.0	15.9	12.9	81.2	13.1	82.4	18.3	115.1	14.0	88.6
Ashley Creek near Vernal	52.7	55.7	105.7	52.7	100.0	82.3	156.1	60.0	114.0	19.1	14.0	73.3	26.0	136.2	24.8	129.8	18.0	94.4
Whiterocks River near Whiterocks	62.4	53.3	85.4	74.8	120.0	62.2	99.7	55.0	88.2	15.6	13.2	84.7	14.9	95.5	15.5	99.3	14.0	89.9
Huntington Creek near Huntington	33.3	30.3	90.9	41.2	123.7	47.7	143.2	41.0	123.0	7.9	6.9	87.3	11.6	146.8	8.8	113.1	8.0	101.2
Beaver River at Beaver	114.3	73.7	64.5	140.0	122.7	107.2	95.2	100.0	87.4	28.0	15.9	56.8	33.0	117.8	26.4	94.3	23.7	84.6
Duchesne River at Tabiona	89.4	81.1	90.7	88.2	93.6	115.3	129.0	85.0	95.1	38.4	31.2	81.2	45.7	119.0	52.3	136.2	38.0	99.0
Uintah River near Neola	14.3	14.2	99.3	23.7	165.8	21.0	146.8	15.0	104.8	3.4	3.8	111.8	5.5	161.8	4.4	129.3	3.6	105.8
Salt Creek near Nephi																		
Big Cottonwood near Salt Lake City	45.0	33.7	75.0	40.6	90.3	32.6	72.5	32.0	71.1	11.5	6.8	59.1	7.2	62.5	6.2	53.9	6.0	52.1
Virgin River at Virgin	95.8	89.0	92.8	63.3	66.1	148.4	150.0	109.0	113.8	31.0	17.6	56.8	27.9	90.0	26.0	83.8	19.0	61.3
Cottonwood Creek at Orangeville	72.1	69.6	96.5	69.3	96.2	62.1	86.1	60.0	83.2	15.5	9.9	63.9	12.9	83.3	12.8	81.3	10.0	64.5

Table III

AVAILABLE STORAGE IN PRINCIPAL RESERVOIRS

ACRE FEET - April 1, 1938

Reservoir	Maximum Capacity	Content, April 1, in Acre-feet						Per Cent Filled
		1933	1934	1935	1936	1937	1938	
Bear Lake	1,420,000	563,050	492,000	161,350	71,000	396,750	582,700	41.0
Utah Lake	83,000	353,000	246,000	118,000	141,000	303,000	392,900	47.6
Echo Reservoir	74,000	25,000	35,800	26,440	15,450	49,000	55,470	75.0
East Canyon	28,000	19,000	14,700	7,300	17,400	20,000	10,640	38.0
Strawberry	278,000	45,000	46,230	12,660	15,060	45,800	81,580	29.3
Scofield	35,000	11,000	10,000	2,000	12,000	15,750	8,000	22.8
Rocky Ford	25,300	10,250	8,500	6,200	10,266	20,000	19,600	77.6
Sevier Bridge	236,000	59,500	48,200	29,250	41,680	67,600	89,500	37.8
Piute	90,000	40,650	27,600	27,380	39,290	45,500	78,000	86.7
Otter Creek	52,600	21,160	17,600	14,600	17,050	22,700	40,200	76.4
Gunnison	20,000			1,500	3,500	20,000	18,500	92.6
Hyrum	14,000				New	9,721	10,430	74.5
Pine View	41,000				New	1,500	26,100	63.8
Mt. Dell	3,514	1,752	2,312	2,373	936	2,293	2,777	78.7
Montez	1,200				New	1,200	925	77.0
Twin Pots					None	3,500	2,600	
Lake Fork								
SUTDRI								
RESERVOIRS								
Lake Fork					None	3,000	2,500	
Region								
Uintah Region					None	4,000	1,200	
Whiterocks						100	1,700	
Pine Lake	1,800						800	44.1
Moon Lake	30,100						5,900	19.6

Table IV

UTAH COOPERATIVE SNOW SURVEYS - 1936-37
(Data for all Snow Courses)

SNOW COURSES BY DRAINAGE AREAS	• M e s u r e s	Elev- ation in Feet	Date of Survey	Depth of Snow in Inches	Water Content of Snow in Inches	Den- sity in Per- cent	Corresponding Water Content			Normal Water Content in Snow to April 1st in inches	Water Content of Snow on Date of Survey in % of Normal	Corres- ponding Percent Last Year	Mois- ture Condi- tion Under Snow
							1935	1936	1937				
COAL CREEK: Cedar Breaks Co-op Flat Webster Flat	59	10200	3/30/38	86.5	29.1	33.6	23.1	24.3	41.2	--	--	--	--
	60	9500	4/1/38	50.8	24.3	39.9	18.1	16.8	31.0	19.0	127.7	163.2	Dry
	61	9200	5/51/38	73.8	27.6	37.4	18.0	18.7	30.0	18.6	148.4	161.3	--
VIRGIN RIVER: Gravel Springs Junct. Harris Flat Ranger S. Duck Creek Ranger St. Cedar Breaks Co-op Flat Webster Flat	56	7500	3/28/38	19.2	8.8	45.8	3.3	13.7	13.7	--	--	--	--
	57	7700	3/28/38	31.6	13.4	42.4	14.1	10.5	21.2	12.4	108.1	170.8	--
	58	8560	5/29/38	60.2	20.5	34.1	20.5	15.3	28.9	--	--	--	--
	59	10200	5/30/38	86.5	29.1	33.6	23.1	24.3	41.2	--	--	--	--
	60	9500	4/1/38	60.8	24.3	39.9	18.1	16.8	31.0	19.0	127.7	163.2	Dry
	61	9200	5/31/38	73.8	27.6	37.4	18.0	18.7	30.0	18.6	148.4	161.3	--
SANTA CLARA RIVER: Pine Valley	62	9150	3/29/38	60.8	23.8	39.1	15.8			--	--	--	--
LA SAL & BLUE MOUNTAIN: La Sal Mountain Buckboard Flat	64	8500	3/30/38	30.5	7.8	25.6	7.7	4.1	11.2	--	--	--	--
	65	9000	3/27/38	51.2	14.4	28.1	15.9	7.9	24.4	--	--	--	--

Table IV (Cont)

UTAH COOPERATIVE SNOW SURVEYS - 1937-38 (Data for all Snow Courses)													
SNOW COURSES BY DRAINAGE AREAS	Course No.	Elev- ation in Feet	Date of Survey	Depth of Snow in Inches	Water Content of Snow in Inches	Den- sity in Per cent	Corresponding Water Content			Normal Water Content in Snow to April 1 in Inches	Water Content of Snow on Date of Survey in % of Normal	Corres- ponding Percent Last Year	Mois- ture Condi- tion Under Snow
							1935	1936	1937				
CACHE VALLEY STREAMS: Franklin Basin (Idaho) Tony Grove Lake Tony Grove Ran. Sta. Spring Hollow No. 3 Spring Hollow No. 4 Mount Logan Smithfield Spring Blacksmith Fork Garden City Summit Blake Ranger Station	1	8200	4/3/38	76.5	24.8	32.4	24.4	39.7	20.8	35.5	69.8	58.6	Moist
	2	8200	4/3/38	87.2	32.4	37.2	29.1	50.5	32.5	45.1	71.8	72.1	Wet
	3	6250	4/3/38	31.4	11.4	36.3	8.6	21.5	15.2	11.3	100.8	134.5	Wet
	4	7000	4/2/38	42.2	14.5	34.4	14.5	20.6	16.2	19.0	76.3	85.2	Wet
	5	8000	4/2/38	42.0	21.9	26.7	28.9	34.8	25.0	32.7	67.0	76.5	Moist
	6	9000	4/2/38	86.9	27.5	31.6	27.9	38.3	27.4	39.1	70.4	70.2	Wet
	7	7000	4/2/38	64.1	23.1	35.7	11.7	16.3	23.8	--	--	--	Moist
	8	8400	4/2/38	44.8	18.0	40.2	16.4	33.9	10.9	19.6	91.8	55.7	Wet
	9	8200	3/29/38	63.4	20.4	32.2	16.4	33.9	18.5	24.4	83.6	75.8	Wet
	12-A	8000	4/1/38	64.2	23.6	36.8	--	22.1	13.3	--	--	--	Wet
	BEAR RIVER: Garden City Summit Headwaters of Bear R. Goodman Ranch Monte Cristo ran. Sta.	9	8200	3/29/38	63.4	20.4	32.2	16.4	33.9	18.5	24.4	83.6	75.8
10	8600	3/26/38	31.1	7.9	25.4	7.8	14.2	8.2	--	--	--	--	--
10-A	7900	3/26/38	22.0	5.9	26.8	--	--	3.7	--	--	--	--	--
12	9000	3/31/38	84.6	30.7	36.3	--	39.2	18.8	18.8	20.4	150.5	92.2	Wet
OGDEN RIVER: Huntsville-Wheeler Div. Monte Cristo Ran. Sta. Blake Ranger Station Geertsen Creek	11-A	5775	3/31/38	13.2	4.0	50.3	4.4	18.1	15.0	11.1	36.1	135.2	Wet
	12	9000	3/31/38	84.6	30.7	36.3	--	39.6	18.8	20.4	150.5	92.2	Wet
	12-A	8000	4/1/38	64.2	23.6	36.8	--	22.1	13.3	--	--	--	Wet
	12-B	8200	3/30/38	52.1	17.2	33.0	--	27.5	23.0	--	--	--	Wet
WEBER RIVER: Parley's Canyon Summit Beaver Creek Ran. Sta. Washington Long Lake Airway Beacon-Chalk Cr. Smith and Morehouse	15	7500	3/30/38	54.8	17.2	51.4	15.0	24.0	19.1	21.4	80.3	89.3	--
	24	7500	3/30/38	23.0	8.5	36.9	6.2	14.0	11.0	10.5	81.0	104.7	Wet
	27	10300	3/27/38	88.9	30.6	54.4	28.0	43.5	33.6	43.1	71.2	78.1	Wet
	29	7000	3/31/38	8.8	3.1	35.2	1.8	12.9	6.0	--	--	--	Frozen
	30	7600	3/25/38	40.9	14.1	54.4	8.8	19.3	13.7	14.9	94.7	91.9	--

Table IV (Cont'd)

UTAH COOPERATIVE SNOW SURVEYS - 1937-38
(Data for all Snow Courses)

SNOW COURSES BY DRAINAGE AREAS	Course No.	Elev- ation in Feet	Date of Survey	Depth of Snow in Inches	Water Content of Snow in Inches	Den- sity in Per cent	Corresponding Water Content			Normal Water Content in Snow to April 1st in Inches	Water Content of Snow on Date of Survey in % of Normal	Corres- ponding Percent Last Year
							1935	1936	1937			
HUNTINGTON, COTTONWOOD, & PERRON CREEKS: (Cont'd) G.B.E.S. Alpine Seeley Cr. R.S. No. 1 Seeley Cr. R.S. No. 2	47	10,200	3/29/38	64.5	20.8	32.2	18.1	29.3	20.7	--	--	--
	48	10,000	3/30/38	63.4	20.7	32.6	21.1	30.4	21.9	22.5	92.0	84.9
	48-A	10,000	3/30/38	50.0	15.9	31.8	15.8	20.8	15.0			
SAN PITCH RIVER: Mammoth Ranger Station G.B.E.S. Oaks Ran. Sta. G.B.E.S. Headquarters G.B.E.S. Meadows G.B.E.S. Alpine	42	8,800	3/30/38	66.2	22.4	33.9	18.7	33.7	26.8	29.0	77.2	92.3
	44	7,550	3/31/38	25.7	8.6	33.4	6.1	9.8	8.7	--	--	--
	45	8,700	3/29/38	54.8	18.8	29.2	14.4	23.5	18.4	--	--	--
	46	10,000	3/30/38	68.5	22.4	32.7	19.4	28.1	21.6	--	--	--
	47	10,200	3/29/38	64.5	20.8	32.2	18.1	29.3	20.7	--	--	--
SEVIER RIVER: Gooseberry Ranger Sta. Fish Lake Kimberly Mine (Lower) Kimberly Mine (Upper) Widtsøe-Escalante Sum. Bryce Canyon Panguitch Lake Gravel Springs Junction Harris Flat Ranger Sta. Duck Creek Spring Cedar Breaks	50	8,400	3/28/38	38.1	10.2	26.8	10.0	9.5	12.3	--	--	--
	51	8,700	3/25/38	27.0	7.0	25.9	5.9	7.6	7.2	--	--	--
	52	8,300	3/30/38	52.1	16.1	30.9	8.8	8.0	15.2	13.1	135.8	159.6
	52-A	8,900	3/30/38	56.2	19.6	29.6	9.5	5.0	24.4			
	53	9,500	3/30/38	34.0	11.1	32.6	8.4	5.0	14.7	11.6	95.7	126.7
	54	8,000	3/30/38	20.5	8.8	42.8	6.5	4.2	13.6	--	--	--
	55	8,200	3/22/38	22.9	9.9	43.2		3.3	11.5	5.9	167.8	195.0
	56	7,500	3/28/38	19.2	8.8	45.8		10.5	13.7	--	--	--
	57	7,700	3/28/38	31.6	15.4	42.4	14.1	10.5	21.2	12.4	108.1	170.8
	58	8,560	3/29/38	60.2	20.5	34.1	20.5	15.3	28.9	--	--	--
	59	10,200	3/30/38	86.5	29.1	35.6	23.1	24.3	41.2	--	--	--
SEVIER RIVER: Merchants Valley Otter Lake Big Flat	63	8,200	4/1/38	42.6	14.6	34.3	11.1	14.9	16.8	11.5	126.9	146.2
	63-A	9,300	4/1/38	64.5	20.7	32.1		18.0	21.1	--	--	--
	63-B	10,000	4/1/38	70.7	23.4	33.1		23.1	26.4	--	--	--

Table IV (Cont'd)

UTAH COOPERATIVE SNOW SURVEYS - 1937-38
(Data for All Snow Courses)

SNOW COURSES BY DRAINAGE AREAS	• Z e s h o o	Elev- ation in Feet	Date of Survey	Depth of Snow in Inches	Water Content of Snow in Inches	Den- sity in Per cent	Corresponding Water Content			Normal Water Content in Snow to April 1st in in. Normal	Water Content of Snow on Data of Survey in % of Normal	Corres- ponding Percent Last Year	Mois- ture Con- diti- on Under Snow
							1935	1936	1937				
STRAWBERRY RESERVOIR (Cont'd.) East Portal East Portal-Strawberry Divide	33	7560	3/30/38	36.5	12.0	32.9	9.0	19.2	17.4	--	--	--	--
	33-A	8000	3/30/38	53.9	19.9	33.8	19.3	31.7	25.6	--	--	--	--
NORTH SIDE UTAH MTS.: Hewinta Ranger Station Hole-in-the-Rock	34	9500	3/24/38	30.3	7.1	23.4	7.1	15.1	8.4	--	--	--	--
	35	9150	3/29/38	25.9	7.9	30.5	2.8	4.0	5.5	--	--	--	Frozen
SOUTH SIDE UTAH MTS.: Lake Fork Mountain Paradise Park Mosby Mountain No. 1 Mosby Mountain No. 2 King's Cabin No. 1 King's Cabin No. 2 Indian Canyon	36	10500	3/29/38	43.6	9.5	21.8	10.1	15.8	14.1	--	--	--	--
	37	10500	3/30/38	45.8	12.3	26.8	12.1	10.7	17.5	--	--	--	--
	38	9700	3/31/38	42.4	11.5	27.1	11.1	9.7	13.5	--	--	--	--
	38-A	9500	3/31/38	45.2	12.3	27.3	11.8	9.9	16.9	--	--	--	--
	39	8800	3/29/38	37.1	11.7	31.5	9.2	9.8	12.4	12.6	88.2	98.3	--
	39-A	8600	3/29/38	53.8	10.4	30.8	8.1	10.9	12.3	--	--	--	--
	40	8100	3/28/38	41.7	12.4	29.7	10.0	8.3	14.3	--	--	--	--
PRICE RIVER: Indian Canyon Gooseberry Reservoir S Mammoth Ranger Station Staley Ranch Dry Valley Divide Clear Creek Huntington Horseshoe	40	9100	3/28/38	41.7	13.4	29.7	10.0	8.3	14.3	--	--	--	Moist
	41	8700	5/31/38	59.7	20.5	34.4	14.0	33.5	24.2	28.3	72.4	85.5	Wet
	42	8800	3/30/38	66.2	22.4	33.9	18.7	33.7	26.8	29.0	77.2	92.3	Wet
	42-A	7600	3/30/38	21.0	7.2	34.3	6.0	11.8	10.7	--	--	--	--
	42-B	7800	3/30/38	38.0	12.3	32.4	15.7	13.2	11.5	--	--	--	--
	42-C	8150	3/30/38	22.0	9.4	42.7	13.0	13.0	12.1	--	--	--	--
	43	9800	3/31/38	76.5	26.1	34.2	23.2	37.6	28.9	31.8	82.2	90.8	Wet
FILLMORE: Pine Creek-Chalk Creek HUNTINGTON, COTTONWOOD, AND FERRON CREEKS: Huntington Horseshoe	49	8500	3/26/38	51.6	15.7	30.4	10.9	10.7	16.2	--	--	--	--
	43	9800	3/31/38	76.5	26.1	34.2	23.2	37.6	28.9	31.8	82.2	90.8	Wet

Table IV (Cont'd)

UTAH COOPERATIVE SNOW SURVEYS -1937-38 (Data for all Snow Courses)														
SNOW COURSES BY DRAINAGE AREAS	Sta- tion No.	Elev- ation in Feet	Date of Survey	Depth of Snow in Inches	Water Content of Snow in Inches	Den- sity in Per- cent	Corresponding Water Content			Normal Water Content in Snow to April 1st in inches	Water Content of Snow on Date of Survey in % of Normal	Corres- ponding Percent Last Year	Mois- ture Condi- tion Under Snow	
							1935	1936	1937					
WEBER RIVER: (Cont'd.) Redden Mine (Upper) Redden Mine (Lower)	31	9000	3/29/38	65.6	21.4	32.6	13.1	29.1	22.15	24.2	88.1	91.3	--	
	31-A	8500	3/29/38	64.5	21.1	32.7	12.4	25.1	21.8					
SALT LAKE WATERSHEDS: Parrish Creek Summit Barnard Creek Hornet Creek Lamb's Canyon Parley's Canyon Summit Silver Lake Mill D South Fork	13	8000	3/24/38	73.4	24.5	33.4	19.0	37.7	29.7	--	--	--	Damp	
	13-A	8000	3/24/38	76.9	24.8	32.2		42.0	33.4	--	--	--	Damp	
	13-B	8100	No	Measurement	1938				18.8	--	--	--	--	
	14	6600	3/31/38	44.4	16.0	36.0	14.1	22.7	18.8	--	--	--	--	
	15	7500	3/30/38	54.8	17.2	31.4	15.0	24.0	19.1	21.4	80.3	89.2	--	
	16	8700	3/31/38	80.8	26.7	33.1	21.0	35.5	24.7				Wet	
	16-A	7400	3/31/38	56.6	18.8	33.2		19.9	19.9	--	--	--	--	
PROVO RIVER & UTAH LAKE: Dutchman Ranger Sta. Timpanogos Cave Camp South Fork Panzer Sta. Camp Altamont Timpanogos Loop Road D. Aspen Grove Y.L.M.I.A. Site Hobble Creek Summit Daniels-Strawberry Sum. Beaver Creek Ranger S. Soapstone Ranger Sta. Trial Lake Washington Long Lake Lost Lake	17	7500	3/29/38	46.6	18.1	38.9	9.6	28.7	25.8	26.5	68.3	97.3	--	
	18	5500	3/27/38	No snow			N.S.	N.S.	N.S.	--	--	--	--	
	19	6100	3/27/38	Patchy			4.0	10.6	7.5 E.	--	--	--	Wet	
	20	7300	3/27/38	46.0	19.8	43.0	11.6	22.0	25.3	--	--	--	--	
	21	8200	3/25/38	70.3	26.5	37.7	16.6	28.1	32.2	--	--	--	--	
	21-A	6900	3/27/38	37.5	17.0	45.3			26.7	--	--	--	--	
	21-B	6000	3/27/38	17.0	7.2	42.3			16.0	--	--	--	--	
	22	7300	4/1/38	35.6	11.7	32.9		20.7	17.6	--	--	--	Wet	
	23	8000	5/30/38	47.2	15.9	33.7	12.7	19.4	20.9	21.5	73.9	97.3	Wet	
	24	7500	3/30/38	23.0	8.5	36.9	6.2	14.0	11.0	10.5	81.0	104.7	Wet	
	25	7800	5/25/38	39.9	12.0	30.1	9.0	18.9	12.0	15.2	79.0	79.0	Wet	
	26	9800	5/28/38	81.2	27.9	34.4	23.5	37.2	28.9	36.3	76.8	79.7	Wet	
	27	10300	3/27/38	88.9	30.6	34.4	28.0	43.5	33.6	43.1	71.2	78.1	Wet	
	28	9900	5/28/38	73.2	24.8	33.9	21.5	34.5	27.6	33.8	73.4	81.7	Wet	
	STRAWBERRY RESERVOIR: Daniels-Strawberry Sum.	23	8000	3/30/38	47.2	15.9	33.7	12.7	19.4	20.9	21.5	73.9	97.3	Wet